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Educational Robots

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Final Report
UGP Mentored Proposal Development Grant (2017-18 AY)

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Brief Summary

The UGP Mentored Proposal Development Grant (2017-18 AY) was awarded to support the development of an NSF CAREER grant under the Social, Behavioral, and Economic Sciences directorate. Although I did not submit a CAREER grant proposal during this period, I made significant progress towards this goal with (1) pilot research that directly informs the studies to be proposed in a forthcoming grant application and (2) submission as Co-Investigator (Investigator: Holly Truitt) of an NIH Science Education Partnership Award (SEPA) – R25 proposal.

Detailed Report

My goal when applying for the UGP Mentored Proposal Development Grant was to develop a proposal for an NSF CAREER grant. The 5-year CAREER grant integrates research and education, and each component is considered equally in the review of proposals. Over the last year, I made significant progress towards the development of both the research and education components, as described below.

The research component seeks to investigate children's understanding of and learning from educational robots. Robots will increasingly be a part of children's learning environments, yet it is unknown whether children will treat robots as credible sources of knowledge. During this last year, as specified in the UGP Mentored grant proposal, my research lab has focused on conducting research that will directly inform and bolster the proposed research. I conducted a study with a human in place of a robot in order to establish (1) a baseline for comparison when we replicate with the robot and (2) a track-record of conducting research with this methodology. In addition, I am currently conducting a study with a robot which (1) involved considerable robot programming and (2) will allow to include pilot data in a forthcoming grant proposal. I anticipated making more progress on the pilot work during this period, however the robot programming was considerably more challenging and consequently delayed progress on this aspect of the work.

The education component of a CAREER grant seeks to increase educational opportunities for traditionally underrepresented groups and children's STEM learning. Over the last year, I have collaborated with Holly Truitt to develop a Community Lab at the new (under-construction) Library-Museum complex. The vision of the Community Lab is to create opportunities for children and families to meaningfully engage with science by involving them in behavioral research, a neuroscience lab, and a high school research mentorship program. To this end, in June 2018 we submitted an NIH SEPA grant proposal (Investigator: Holly Truitt, City of Missoula; Co-Investigator: Rachel Severson, UM) that includes the Community Lab, in addition to other interactive educational components as part of spectrUM Discovery Center at the new Museum-Library complex. If funded, I will serve as Director of the Community Lab and PI for

the UM component of the NIH SEPA grant. In addition, I have been prototyping the behavioral research lab concept at spectrUM Discovery Center at Toole Crossing. In addition, I have developed an additional educational robotics program to be included in the forthcoming grant proposal. The robotics program would provide developmentally-appropriate technologies for P-12 students to gain essential conceptual and practical skills in programming, robotics, and ‘computational thinking’, and could be implemented as part of the Community Lab at the new Library-Museum complex.

I plan to submit an NSF grant within the next year. I will still be eligible to submit an NSF CAREER during the next round (July 2019). I will work with the cognizant program director at NSF to determine whether my proposed research (and educational components) are best suited for a standard NSF research grant or the CAREER grant.

Note that the UGP Mentored grant included funds (\$500) to compensate two mentors with extensive grant-funded experience. However, these funds were not used. I will continue to work with the two mentors (Dr. Jacqueline Woolley, UT Austin, and Dr. Angeline Lillard, University of Virginia) as I develop my forthcoming grant proposal.